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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/976,111	10/15/2001	Kazuhisa Kunitake	110497	9315
25944	7590	01/29/2004	EXAMINER	
OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320			RIDLEY, BASIA ANNA	
			ART UNIT	PAPER NUMBER
			1764	

DATE MAILED: 01/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/976,111

Applicant(s)

KUNITAKE ET AL. 

Examiner

Basia Ridley 

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 18 December 2003.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,2,14,16,17 and 23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,14,16,17 and 23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 7,8.
- 4) ☒ Interview Summary (PTO-413) Paper No(s). 012004.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Drawings*

1. The drawings were received on 18 December 2003. These drawings are acceptable.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claim(s) 1, 14, 16 and 23 is/are rejected under 35 U.S.C. 102(b) as being anticipated by Van Hook et al. (USP 4,026,823).

Regarding claims 1, 14, 16 and 23, Van Hook et al. discloses a fuel reforming apparatus comprising:

- a reformer including a reforming catalyst (C1/L34-56);
- wherein a carbon removal process for removing carbon deposited on the reforming catalyst under a predetermined condition, is executed by controlling at least one of an amount of the raw fuel supplied to the reformer and an amount of the oxygen supplied to the reformer so that an O/C ratio becomes larger than an appropriate range of the O/C ratio that is to be established during a normal operation (C2/L34-47);
- wherein the carbon removal process is intermittently executed a plurality of times (C2/L34-47);
- wherein the controller executes the carbon removal process by controlling the amount of the oxygen supplied to the reformer to be larger than a predetermined amount thereof that is set for

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the normal operation of the reformer (C2/L34-47).

While the reference does not explicitly disclose various supply devices, such as a raw fuel supply device, a water supplying device and an oxygen supplying device, since the reference disclosed that raw fuel, water and oxygen are supplied to the process (C1/L34-C2/L48), the presence of said supply devices in system disclosed by Van Hook et al. is inherent.

While the reference does not explicitly disclose a controller, since it discloses that it is desired to control various operating conditions, e.g. steam to carbon ratio (C2/L49-53), the presence of controller for controlling raw material feed rates in the system disclosed by Van Hook et al. is inherent.

Instant claim(s) 1, 14, 16 and 23 structurally read(s) on the reformer of Van Hook et al.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim(s) 2 and 17 is/are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Hook et al. (USP 4,026,823).

Regarding claims 2 and 17, while Van Hook et al. is silent with regard to the timing of the carbon removal processes, to perform said carbon removal process when the amount of the accumulated carbon exceeds a predetermined threshold value, based on a history of an operating condition of the reformer would have been an obvious choice for an ordinary artisan in order to maximize efficiency of the reformer operation by balancing the cost of additional oxygen supply

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with cost of inefficient production time when the reformer operates with carbon deposits. See *In re Sovish*, 769 F.2d 738, 742-43, 226 USPQ 771, 774 (Fed. Cir. 1985); and *In re Bozek*, 416 F.2d 1385, 1390, 163 USPQ 545, 549 (CCPA 1969).

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

#### ***Response to Arguments***

7. Applicant's arguments filed on 18 December 2003 have been fully considered but they are not persuasive.

The applicant argues that Van Hook et al. discloses control of steam to carbon ratio rather than control of the oxygen to carbon ratio as recited in the instant claims. This is not found persuasive. The applicant is directed to column 2, lines 34-47 of Van Hook et al. which discloses a reformer including a reforming catalyst wherein a carbon removal process for removing carbon deposited on the reforming catalyst under a predetermined condition, is executed by controlling at least one of an amount of the raw fuel supplied to the reformer and an amount of the oxygen supplied to the reformer so that an O/C ratio becomes larger than an appropriate range of the O/C ratio that is to be established during a normal operation, wherein the carbon removal process is intermittently executed a plurality of times and wherein the

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controller executes the carbon removal process by controlling the amount of the oxygen supplied to the reformer to be larger than a predetermined amount thereof that is set for the normal operation of the reformer. While the reference does not explicitly disclose various supply devices, such as a raw fuel supply device, a water supplying device and an oxygen supplying device, since the reference disclosed that raw fuel, water and oxygen are supplied to the process (C1/L34-C2/L48), the presence of said supply devices in system disclosed by Van Hook et al. is inherent. While the reference does not explicitly disclose a controller, since it discloses that it is desired to control various operating conditions, e.g. steam to carbon ratio (C2/L49-53), the presence of controller for controlling raw material feed rates in the system disclosed by Van Hook et al. is inherent.

### ***Conclusion***

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.


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9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Basia Ridley, whose telephone number is (571) 272-1453. The examiner can normally be reached on Monday through Thursday, from 9:00 AM to 7:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola, can be reached on (571) 272-1444.

The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0661.

Basia Ridley   
Examiner  
Art Unit 1764

BR  
January 22, 2004

SUPERVISOR  
NADINE G. NORTON  
PRIMARY EXAMINER  
